

What is claimed is:

1. A method for controlling handoffs in a wireless communication system,
2 comprising the steps of:
 - 3 receiving a location vector associated with a mobile unit; and
 - 4 determining whether to perform a handoff of the mobile unit based on the received
5 vector.
1. 2. The method of claim 1, further comprising the steps of:
 - 2 transmitting the location vector to the mobile unit, wherein the vector includes location
3 and time coordinates; and
 - 4 receiving a response from the mobile unit based on the transmitted vector.
1. 3. The method of claim 1, wherein the location vector comprises Global Positioning
System (GPS) data.
1. 4. The method of claim 1 wherein the location vector comprises terrestrial data.
1. 5. The method of claim 2, wherein the determining step further comprises the step of
2 determining whether to perform the handoff based on the received response.
1. 6. The method of claim 1, wherein the determining step further comprises the step of
2 calculating a magnitude of the received vector, wherein the magnitude corresponds to a coverage
3 area of a base station.
1. 7. The method of claim 6, wherein the determining step further comprises the steps
2 of:
 - 3 receiving one or more magnitudes corresponding to coverage areas of one or more other
4 base stations;
 - 5 comparing the calculated magnitude to the received magnitudes; and
 - 6 determining that the handoff is necessary when one of the received magnitudes is less
7 than the calculated magnitude.
1. 8. The method of claim 1, further comprising the steps of:
 - 2 receiving a plurality of received vectors associated with the mobile unit;
 - 3 calculating a magnitude of each of the plurality of received vectors;
 - 4 combining the calculated magnitudes into a combined magnitude; and
 - 5 determining whether the handoff is necessary based on the combined magnitude.
1. 9. The method of claim 8, wherein the determining step further comprises the step
2 of:
 - 3 receiving one or more magnitudes from one or more other base stations;
 - 4 comparing the combined magnitude to the received magnitudes; and

5 determining that a handoff is necessary when one of the received magnitudes is less than
6 the combined magnitude.

1 10. The method of claim 1, further comprising the steps of:
2 receiving a plurality of vectors associated with the mobile unit;
3 detecting multipath propagation when at least two of the plurality of received vectors
4 include identical location and time coordinates; and
5 performing the handoff when multipath propagation is detected.

1 11. The method of claim 1, wherein the determining step further comprises the steps
2 of:
3 obtaining service quality data based on the received vector, wherein the service quality
4 data includes at least one of an environmental and geographical condition related to a coverage
5 area of a base station; and

6 determining whether to perform the handoff based on the service quality data.

1 12. The method of claim 11, wherein the obtaining step further comprises the steps of:
2 extracting at least one of a location and time coordinate from the received vector; and
3 retrieving the service quality data from a database based on the extracted information.

1 13. The method of claim 12, wherein the retrieving step further comprises the step of:
2 retrieving a geographical condition from the database based on location coordinates
3 extracted from the received vector, the retrieved geographical condition including at least one of:
4 topographical data, structural data, and known reflection path.

1 14. The method of claim 12, wherein the retrieving step further comprises the step of:
2 retrieving an environmental condition from the database based on time information
3 extracted from the received vector, the environmental condition selected from the group
4 consisting of at least: rain, wind, temperature and humidity.

1 15. The method of claim 1, further comprising the steps of:
2 receiving a plurality of received vectors associated with the mobile unit;
3 estimating future location coordinates for the mobile unit based on the plurality of
4 received vectors; and
5 retrieving a geographical condition from a database based on the estimated future location
6 coordinates.

1 16. The method of claim 1, wherein the received vector further comprises time
2 information.

1 17. The method as in claim 1 further comprising the step of generating the vector at
2 the mobile unit.

1 18. The method as in claim 1 further comprising the step of generating the vector at a
2 base station.

1 19. The method as in claim 1 further comprising generating the vector at a GPS
2 satellite.

1 20. A device for controlling handoffs in a wireless communication system,
2 comprising:

3 means for receiving a location vector associated with a mobile unit; and

4 means for determining whether to perform a handoff of the mobile unit based on the
5 received vector.

1 21. The device of claim 20, further comprising:

2 means for transmitting the location vector to the mobile unit, wherein the vector includes
3 location and time coordinates; and

4 means for receiving a response from the mobile unit based on the transmitted vector.

1 22. The device of claim 20, wherein the location vector comprises Global Positioning
2 System (GPS) data.

1 23. The device of claim 20 wherein the location vector comprises terrestrial data.

1 24. The device of claim 21, further comprising means for determining whether to
2 perform the handoff based on the received response.

1 25. The device of claim 20, further comprising means for calculating a magnitude of
2 the received vector, wherein the magnitude corresponds to a coverage area of a base station.

1 26. The device of claim 25, wherein the means for calculating further comprises:

2 means for receiving one or more magnitudes corresponding to coverage areas of one or
3 more other base stations;

4 means for comparing the calculated magnitude to the received magnitudes; and

5 means for determining that the handoff is necessary when one of the received magnitudes
6 is less than the calculated magnitude.

1 27. The device of claim 20, further comprising:

2 means for receiving a plurality of received vectors associated with the mobile unit;

3 means for calculating a magnitude of each of the plurality of received vectors;

4 means for combining the calculated magnitudes into a combined magnitude; and

5 means for determining whether the handoff is necessary based on the combined
6 magnitude.

1 28. The device of claim 27, further comprising:

2 means for receiving one or more magnitudes from one or more other base stations;

3 means for comparing the combined magnitude to the received magnitudes; and
4 means for determining that a handoff is necessary when one of the received magnitudes is
5 less than the combined magnitude.

1 29. The device of claim 20, further comprising:

2 means for receiving a plurality of vectors associated with the mobile unit;

3 means for detecting multipath propagation when at least two of the plurality of received
4 vectors include identical location and time coordinates; and

5 means for performing the handoff when multipath propagation is detected.

1 30. The device of claim 20, further comprising means for obtaining service quality
2 data based on the received vector, wherein the service quality data includes at least one of an
3 environmental and geographical condition related to a coverage area of a base station, and means
4 for determining whether to perform the handoff based on the service quality data.

1 31. The device of claim 30, further comprising means for extracting at least one of a
2 location and time coordinate from the received vector and means for retrieving the service quality
3 data from a database based on the extracted information.

1 32. The device of claim 31, wherein the means for retrieving further comprises means
2 for retrieving a geographical condition from the database based on location coordinates extracted
3 from the received vector, the retrieved geographical condition including at least one of:
4 topographical data, structural data, and known reflection path.

1 33. The device of claim 31, wherein the means for retrieving further comprises means
2 for retrieving an environmental condition from the database based on time information extracted
3 from the received vector, the environmental condition selected from the group consisting of at
4 least: rain, wind, temperature and humidity.

1 34. The device of claim 20, further comprising:

2 means for receiving a plurality of received vectors associated with the mobile unit;

3 means for estimating future location coordinates for the mobile unit based on the plurality
4 of received vectors; and

5 means for retrieving a geographical condition from a database based on the estimated
6 future
7 location co-ordinates.

1 35. The device of claim 20, wherein the received vector further comprises time
2 information.

1 36. The device as in claim 20 further comprising means for generating the vector at
2 the mobile unit.

1 37. The device as in claim 20 further comprising means for generating the vector at a
2 base station.

1 38. The method as in claim 20 further comprising means for generating the vector at a
2 GPS satellite.